Book Reviews

D'Arcy Wentworth Thompson. The scholar-naturalist, 1860–1948. Ruth D'Arcy Thompson. Oxford University Press, New York, 1958. xi + 244 pp. $4.

It has not been customary, during the past several generations, to write books about biology subjectively. *Growth and Form,* which appeared first in 1917 and again in 1942, greatly revised and expanded, has seemed an outstanding exception. This is a book with many virtues, the first of which is surely that it develops an original and stimulating idea about the relationships between biology and mathematics. Almost as important, however, is the fact that both its wonderful style and its diversified content let the personality of its author shine through. It brings the reader to share the enthusiasm and love of D'Arcy Thompson not only for an idea, not only for literature and for wisdom, but particularly for the creatures of the earth, the waters, and the skies. The reader envisions the author as having been a sort of latter-day Aristotle, as happy in prowling the fish markets and shores of the northern ocean as was his predecessor who frequented those which rimmed a more temperate sea. His writings are genial, in more than one sense of the word, and they seem to reflect the mood of a contented and successful man.

This biography by his daughter amends the impression. He was happy indeed in his remarkable family, but he was fretful and unhappy in his isolation in Dundee—where he spent over 30 years, including those in which he completed the first edition of *Growth and Form*—and frankly embittered at his lack of recognition. Though he was eventually to serve as its vice president, it was only in 1916, in the middle of his sixth decade, that he was elected a fellow of the Royal Society. It comes as a shock, too, to the present generation, which unthinkingly speaks of evolution and mechanism in the same half breath, to be reminded that *Growth and Form,* when it first appeared, was considered daringly antievolutionary.

This biography is of value, however, not only for what it tells of things of which we may not have known but also for what it confirms of things we have felt about the quality of D'Arcy as a person. His daughter's text, which is ably written in its own right, is richly interspersed with excerpts from his own letters and writings, and all that stands here, in his own words or his daughter's, attests to his honesty, simplicity, and kindness. This book is recommended not only to those who are interested in the growth and form of an idea but as strongly to those for whom the growth and form of humanity has meaning.

JANE OPPENHEIMER
Department of Biology,
Bryn Mawr College

Biological Ultrastructure. Arne Engström and J. B. Finean. Academic Press, New York, 1958. ix + 326 pp. Illus. $8.

The field of biological fine structure is currently in a state of very rapid expansion, and as a result there exists a great need for suitable source books. The present volume is valuable from this point of view. As stated in their preface, the aim of the authors has been to introduce the rather extensive field of biological ultrastructure to the student and also, rather importantly, to the research worker in various fields of medical and biological science who is becoming more interested in the fine structure of the systems he studies in relation to their biophysical and biochemical properties.

The authors have adopted the useful device of beginning with the simple building blocks, progressing to the larger molecules, and finally considering a number of biological systems of current interest. While this approach is useful from the standpoint of teaching, it inevitably reduces the coverage of any particular system, so that the specialist in a given field is likely to find relatively little of interest in his specialty. The book is illustrated with a considerable number of electron micrographs, x-ray diffraction diagrams, and line drawings, which, although generally of good quality, could, in some instances at least, have been chosen with a more critical eye.

After a short introductory chapter, the methods used in ultrastructural research are presented rather briefly. The essentials of the various methods of microscopy (phase contrast, interference, polarization, x-ray, and electron microscopy), spectroscopic techniques, and x-ray diffraction are outlined in a concise and readable form. Following this is a chapter on principles of molecular structure, beginning with simple atomic and molecular theory and progressing to a consideration of more complex aggregations, such as liquid crystals and gels, and their relation to the structure of water. The bulk of the book is taken up with a more detailed consideration of the roles of proteins, lipids, carbohydrates, nucleic acids, and mineral salts, the last-mentioned discussion being a discourse on mineralized tissues, both normal and pathological.

As would be expected, the authors are at their best in those chapters nearest to their own particular specialties, the lipid systems and mineral salts. The material in these various chapters is well presented, on the whole, but the more experienced worker in the field will be handicapped by the paucity of references, and the specialist will recognize various inaccuracies—for instance, the concept that the structure of native collagen is not easily reconciled with a macromolecular unit about 2800 angstroms in length. On the contrary, present results of refined physical chemical measurements and of electron microscopy are overwhelmingly in favor of such a unit. Again, the concept of linear aggregation of globular units in fibrogenesis is presented as an established fact, whereas in reality there are at least several important proteins in which there is no evidence for such a view, and in which, on the contrary, the available data are strongly in favor of highly asymmetric rodlike monomeric units.

On the whole, the book is a useful addition to the literature in this field, but it could reasonably be argued that its rather general title should have been reserved for a very much more comprehensive work.

A. J. HODGE
Department of Biology,
Massachusetts Institute of Technology

Medical Sociology. Theory, scope and method. Norman G. Hawkins. Thomas, Springfield, Ill., 1958. xx + 290 pp. $6.75.

The most appropriate comment about this book is given by the author in the foreword: "This book is not intended to be read lightly, nor is it intended for light readers. . . . Nor is this intended